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FITCH, EVEN, TABIN & FLANNERY, LLP
120 SOUTH LASALLE STREET
SUITE 1600
CHICAGO, IL 60603-3406

EXAMINER	
BLAND, LAYLA D	
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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte RICHARD L. ANTRIM, FRANK W. BARRESI, ROGER McPHERSON, and JIAO WANG

Appeal 2011-006796
Application 10/601,912
Technology Center 1600

Before DONALD E. ADAMS, DEMETRA J. MILLS, and FRANCISCO C. PRATS, *Administrative Patent Judges*.

MILLS, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134. The Examiner has rejected the claims for anticipation and obviousness. We have jurisdiction under 35 U.S.C. § 6(b).

STATEMENT OF CASE

The Specification discloses a dextrinized oligosaccharide which may be a malto-oligosaccharide. (Spec. 4, 6.) The oligosaccharide is slowly digestable (Spec. 3, 11) and has an acceptable texture (Spec. 12).

Claim 1 is representative and follows:

1. A saccharide-derivatized oligosaccharide mixture comprising the extrusion reaction product of a saccharide product having a degree of polymerization of 1-4 with a mixture of malto-oligosaccharides having a degree of polymerization of 5 or more, said saccharide product comprising at least 50% dextrose, said mixture of malto-oligosaccharides comprising a starch hydrolyzate to which additional saccharide has been added, wherein upon extrusion sufficient heat and work are imparted to said mixture of malto-oligosaccharides and said saccharide product to derivatize at least some of said malto-oligosaccharides with said saccharide product, the derivatization being catalyzed with an acid, to form a carbohydrate product that includes at least some 1,2 and 1,3 bonds and in which a majority of the linking bonds are 1,4 bonds.

Cited References

Ohkuma et al.	US 5,358,729	Oct. 25, 1994
Meyers et al.	US 5,518,739	May 21, 1996
Porzio et al.	US 5,603,971	Feb. 18,1997
Saleeb et al.	US 5,972,395	Oct.26, 1999
Fouache	US 6,630,586 B1	Oct. 7, 2003
Stahl et al.	WO/0133973	May 17, 2001

Tate & Lyle, *Star-Dri Maltodextrins & Corn Syrup Solids*,

Grounds of Rejection

Claims 1, 2, 4, 34, 35, 41, and 43 are rejected under 35 U.S.C. §102(b) as being anticipated by Saleeb as evidenced by Tate & Lyle.

Claims 1, 2, 4, 34, and 41-43 are rejected under 35 U.S.C. § 1 02(b) as being anticipated by Porzio as evidenced by Tate & Lyle.

Claims 1,2,4,34,35, and 41-43 are rejected under 35 U.S.C. § 102(b) as being anticipated by Okhuma.

Claims 1, 2, 4, 34-35, and 41-43 are rejected under 35 U.S.C. §102(b) as being anticipated by Meyers.

Claims 1, 2, 4, 34, and 41-43 are rejected under 35 U.S.C. §102(e) as being anticipated by Fouache.

Claims 1, 2, 4, 34, 35, and 41-43 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Stahl.

FINDINGS OF FACT

The Examiner's findings of fact are set forth in the Answer at pages 3-8.

PRINCIPLES OF LAW RELEVANT TO THE REJECTIONS

In order for a prior art reference to serve as an anticipatory reference, it must disclose every limitation of the claimed invention, either explicitly or inherently. *See In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997). To anticipate, every element and limitation of the claimed invention must be found in a single prior art reference, arranged as in the claim. *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383 (Fed. Cir. 2001).

Moreover:

> *Where . . . the claimed and prior art products are identical or substantially identical,* or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product…. Whether the rejection is based on "inherency" under 35 U.S.C. § 102, on "prima facie obviousness" under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same,

> and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products.

In re Best, 562 F.2d 1252, 1255 (CCPA 1977) (emphasis added.)

> "The patentability of a product does not depend on its method of production. If the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 697 (Fed. Cir. 1985) (citation omitted).

> "[T]he patentability of a claim to a *product* does not rest merely on a difference in the method by which that product is made. Rather, it is the product itself which must be new and unobvious." *In re Pilkington*, 411 F.2d 1345, 1348 (CCPA 1969) (emphasis in original).

"In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness. Only if that burden is met, does the burden of coming forward with evidence or argument shift to the applicant." *In re Rijckaert*, 9 F.3d 1531, 1532 (Fed. Cir. 1993) (citations omitted). In order to determine whether a prima facie case of obviousness has been established, we consider the factors set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966): (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of ordinary skill in the relevant art; and (4) objective evidence of nonobviousness, if present.

"The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

Discussion

Claims 1, 2, 4, 34, 35, 41, and 43 are rejected under 35 U.S.C. § 102(b) as being anticipated by Saleeb as evidenced by Tate & Lyle.

ISSUE

The Examiner concludes that Saleeb teaches each element claimed, while Tate and Lyle evidence that the 5DE maltodextrin of Saleeb contains dextrose (about 1%) along with other oligosaccharides, 88% of which are DP11 + or higher. (Ans. 4.) The Examiner argues that the oligosaccharide mixture of Saleeb is made by the same process as the claimed oligosaccharide mixture and therefore results in the same product.

Appellants argue that

> characteristics of the starting material that is extruded is[sic] important in providing a saccharide-derived oligosaccharide mixture with the desired types of bonds and resulting properties. Applicants have surprisingly and unexpectedly found that the starting material recited in claim 1 provides a carbohydrate product with desirable properties. None of the cited references describes or suggests the starting materials as recited in claim 1.

(Br. 7.)

Appellants argue that

> Saleeb does not teach derivatization at all. Saleeb is purportedly directed to a method for fixing a liable material in an extruded "carbohydrate glass" substrate. Saleeb includes a laundry list of components that could be reacted. One of ordinary skill would have no reasonable expectation that the process described in Saleeb would provide anything even similar to the type of bonds as claimed

> and would have no guidance as to which starting materials are important in providing a product with the claimed bonds.

(id.7.)

The issue is: Does Saleeb teach each and every element, as claimed?

ANALYSIS

We agree with the Examiner's fact finding, statement of the rejection and responses to Appellants' arguments as set forth in the Answer. We find that the Examiner has provided evidence to support a prima facie case of anticipation.

The Examiner argues that both the claimed oligosaccharide mixture and that of Saleeb are made by the same process, including the extrusion of a saccharide (dextrose i.e., glucose, Saleeb, col. 7, ll. 3-4) and mixture of malto-oligosaccharides at a temperature of 190 degrees, the melting point of the major ingredient (Saleeb, col. 7, l. 2; col. 8, ll. 50-59.)

Appellants argue that Saleeb does not suggest the claimed starting materials or the dextrose levels claimed. (Br. 7-8.)

In response to Appellants' argument regarding dextrose levels, the Examiner argues that

> Appellant's argument with respect to the amount of dextrose in the starting material is not persuasive because the claims are broad, the claims are drawn to a mixture, and the claims do not require a particular amount of dextrose in the mixture. Furthermore, the claims do not require a particular weight amount of dextrose in the starting material. For example, the saccharide product starting material itself is not required in any particular amount. The reaction mixture could contain, for example, 10 g of saccharide product which is 100% dextrose, or 1 mg of saccharide product which is 50% dextrose. Each

> scenario meets the claimed limitation of starting material which is at least 50% dextrose, and each scenario results in very different amounts of dextrose in the mixture. … [T]he instant claims require an extrusion reaction product of a mixture of: (1) a saccharide product having a DP of 1-4 and comprising at least 50% dextrose; (2) a mixture of malto-oligosaccharides having a DP of 5 or more; (3) a starch hydrolysate; and (4) an additional saccharide. A starch hydrolyzate is a product resulting from the hydrolysis of starch, and encompasses malto-oligosaccharides and dextrose. The additional saccharide could be considered any saccharide, but especially dextrose as recited in claim 41. Thus, the mixture which is subject to extrusion reaction contains, at minimum, dextrose and malto-oligosaccharides having a DP of 5 or more. There is no limitation placed on the amount of dextrose as a percentage of the total mixture which is subject to extrusion. Thus, Appellant's arguments with respect to the amount of dextrose taught by Saleeb are drawn to limitations which are not claimed.

(Ans. 8- 9.)

> The Examiner further finds that
>
> Thus, Saleeb's dextrose could be considered the "saccharide product," which is at least 50% dextrose. Saleeb's dextrose could also be considered the starch hydrolyzate or the additional saccharide, as set forth above. Thus, it is considered that Saleeb's mixture contained a saccharide product which was at least 50% dextrose.

(Ans. 10.) We agree with the Examiner that the claims are broad and due to the breadth of the claims, claim 1 would read on a mixture of maltodextrin with one molecule of dextrose.

We find that the Examiner has a reasonable claim interpretation and has the better argument. Appellants have not adequately or convincingly countered this argument or claim interpretation.

Appellants then argue that the claimed product and that of Saleeb are not made by the same process because the processes take place at different temperatures. (Reply Br. 2.) However, the Examiner provides evidence of temperature overlap of the Saleeb process (Ans. 4) and that described in the Specification (Ans. 8). Thus, the Examiner has reasonable basis to believe that the claimed products and that of Saleeb are the same or substantially the same, and under the principles of *In re Best*, the burden has shifted to Appellants to show they are not. This Appellants have not done.

The anticipation rejection over Saleeb is affirmed for the reasons of record.

Discussion

Claims 1, 2, 4, 34, and 41-43 are rejected under 35 U.S.C. §102(b) as being anticipated by Porzio as evidenced by Tate & Lyle.

ISSUE

The Examiner argues that

> Porzio teaches a process wherein 10 DE maltodextrin, 42 DE corn syrup solids, and 0.5 wt% citric acid were extruded at 300°F (about 149°C). Typically, the temperature will be up to 320°F (about 160°C). The maltodextrin and corn syrup solids (starch hydrolyzates) comprise a variety of oligosaccharides, including dextrose and those which have DP of 5 or greater, as evidenced by Tate & Lyle. The "additional saccharide" could be any of the oligosaccharides present in the mixture. Although Porzio does not teach whether the product contains a majority of 1 ,4-bonds as well as some 1,2- and 1,3-bonds, the product is made by the same process as is recited in the instant claims, and so the product should be the same as that of the instant claims.

(Ans. 5.)

Appellants contend that Porzio does not teach derivatization at all. (Br. 8.) Appellants further argue that Porzio does not describe or suggest starting materials as claimed. Porzio provides no indication whatsoever that any starting component being extruded should include at least 50% dextrose as claimed. (*Id.*) Appellants argue that, "The die head temperatures disclosed in the examples of Porzio are lower than that indicated in the specification (and recited in claim 35). A temperature of 160º C, on the low end of the range of sample temperatures taught in the instant specification, is equal to 320º F. Also, Porzio uses a very specific mixture starting materials. The process of Porzio is hence not identical to the process provided in the specification." (Reply Br. 3.) Appellants argue that "contrary to what the Examiner states, the process of Porzio would not inherently lead to the same results as the claimed process." (Reply Br. 3.)

In spite of the arguments of Appellants, the Examiner has provided a reasonable basis to believe and evidence that the process steps of Porzio are the same or substantially the same as those of the claimed product. (*See* Ans. 5.) "[T]he patentability of a claim to a *product* does not rest merely on a difference in the method by which that product is made. Rather, it is the product itself which must be new and unobvious." The Examiner properly shifted the burden of proof to Appellants to show that the product of Porzio and that claimed were not the same. This Appellants did not do. The anticipation rejection over Porzio is affirmed.

Discussion

Claims 1,2,4,34,35, and 41-43 are rejected under 35 U.S.C. §102(b) as being anticipated by Okhuma.

ISSUE

The Examiner finds that

> Okhuma's product is a mixture of dextrins and contains the linkages as recited in claim 1. Thus, Okhuma's product appears to be the same as one prepared by the process recited in claim 1. The extrusion reaction is expected to result in bond breakage (starch hydrolysis) and new bond formation, and it is unclear how the addition of dextrose, as recited in amended claim 1, would affect the structure of the final product. Applicant mentions only that the dextrose serves as a processing aid. Furthermore, it is noted that no particular amount of dextrose or saccharide product is required by the claims… Thus, the claims are seen to encompass products prepared by the extrusion of mixtures which contain very small amounts of dextrose. Even if the effect of dextrose on the structure of the final product was clear, products prepared with very small amounts of dextrose would be very difficult to distinguish from Okhuma's product, since hydrolysis of starch and thus liberation of small oligosaccharides is expected to occur during Okhuma's process, producing a reaction mixture which contains large and small oligosaccharides. Okhuma's product appears to be the same as the claimed product for these reasons.

(Ans. 10-11.)

Appellants contend that

> Okhuma not only fails to anticipate, Okhuma would not be useful in connection with a Section 103 rejection. Okhuma teaches away from a product in which a majority of bonds are 1,4 bonds. Only Sample No.1 (in Table 4, bridging columns 14 and 15) is the content of 1,4 bonds said to constitute a majority of the linking bonds.

> In the remaining samples, there are fewer 1,4 bonds, and the digestibility is lower.

(App. Br. 9.)

Appellants argue that

> Okhuma does not describe or suggest a product in which the starting saccharide includes 50% dextrose, nor a starting material comprising a starch hydrolyzate to which additional saccharide has been added. Okhuma's starch is treated with hydrochloric acid, and the resulting product is extruded. There is no teaching or suggestion of the dextrose content of this starting material, and no suggestion of adding additional saccharide to a hydrolyzed starch.

(Reply Br. 4.)

In spite of the arguments of Appellants, the Examiner has provided evidence that the process steps of Ohkuma would result in a product that is the same or substantially the same as the broadly claimed product, and at least one Example of Ohkuma has the claimed amount of 1,4 bonds. (*See* Ans. 5; *see also* 10-11 (quoted above).) Appellants have not explained with any specificity why the Examiner's rationale, or underlying findings, are erroneous. "[T]he patentability of a claim to a *product* does not rest merely on a difference in the method by which that product is made. Rather, it is the product itself which must be new and unobvious." The Examiner properly shifted the burden of proof to Appellants to show that the product of Porzio and that claimed were not the same. These Appellants did not do. The anticipation rejection over Okhuma is affirmed.

Discussion

Claims 1, 2, 4, 34-35, and 41-43 are rejected under 35 U.S.C. §102(b) as being anticipated by Meyers.

Claims 1, 2, 4, 34, and 41-43 are rejected under 35 U.S.C. § 102(e) as being anticipated by Fouache.

Claims 1, 2, 4, 34, 35, and 41-43 are rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Stahl.

With respect to each of the three rejections above, we do not find that the Examiner has met his initial burden of presenting a prima facie case of anticipation or obviousness.

With respect to Myers and unlike the rejections in view of Saleeb, Porzio and Ohkuma, the Examiner has not pointed to a specific location in Meyers and thus has not provided evidence that the claimed product and that of Meyers are made by the same process. Thus the Examiner has not provided sufficient evidence that the claimed product and that of Meyers are the same or substantially the same to shift the burden of proof to Appellants to prove they are not the same. Thus, the Examiner has not provided evidence to support a prima facie case of anticipation and the rejection over Meyers is reversed.

With respect to Fouache, we also find that the Examiner has not provided sufficient evidence to support a prima facie case of anticipation. Fouache indicates that the content of glucosidic linkages 1, 4 can be between 42 and 50%. (Col. 3, ll. 28-30.) In addition, Fouache, col. 8, Table 1, provides a product, Example, C, with 50% 1,4 linkages. Thus, the Examiner has not provided sufficient evidence in the prior art of a product with a

majority of linking bonds which are 1, 4 bonds, as claimed. The anticipation rejection over Fouache is reversed.

Finally, with respect to Stahl, Appellants argue that

> Stahl discloses carbohydrates that have been modified with various enzymes. As earlier discussed, enzymatic reactions of the type disclosed by Stahl are extraordinarily *specific.* They produce carbohydrates and related byproducts of a distinct, characteristic profile. In contrast, although general trends may be maintained, the specificity of bacterial reaction is not possible in an extruder. The profile of products prepared in accordance with the present teachings are markedly different from an enzymatically produced product.

(Reply Br. 6.)

In response, the Examiner argues that Claim 10 of Stahl is drawn to a product made using *Aspergillus niger,* which would be expected to give primarily 1,4 linkages. (Ans. 12.) The Examiner fails to point to a specific location in Stahl to support that a product made using *Aspergillus niger,* which would be expected to give primarily 1,4 linkages, nor is there any specific evidence supporting the position that enzymatic derivatization would result in a product the same, or similar, to that produced by the claimed extrusion process.

Thus, we find that the Examiner has not supported the rejection in view of Stahl with sufficient evidence, and the anticipation and obviousness rejections over Stahl are reversed.

CONCLUSION OF LAW

The cited references support the Examiner's anticipation rejections over Saleeb, Porzio and Ohkuma, which are affirmed. The Examiner has not provided sufficient evidence to support a prima facie case of anticipation

over Myers and Fouache, or an anticipation or obviousness rejection over Stahl. These rejections are reversed.

However, since all claims remain rejected in view of the rejections over Saleeb, Porzio and Ohkuma, the rejections of the claims are affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

dm